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ABSTRACT

This paper is the first of a series of three which attempt to integrate categories of description aimed at characterizing the experience of learning in terms of the logical relationships that exist between them. The description of the qualitatively different ways in which various aspects of reality are experienced and conceptualized, and the search for logical relations between the categories of description arrived at have been labelled phenomenography. The categories dealt with here depict characteristics of the outcome and style of learning, and the approach to and the motivation for learning. It is concluded that a "horizontalised" outcome (in which a text's hierarchical structure is levelled out) implies operation learning in terms of Pask's dichotomy of styles, of which comprehension learning represents the other alternative. Comprehension learning implies a deep approach (as it is defined by Marton) while its opposite, the surface approach, implies extrinsic motivation. In such a way, categories of description can be linked to each other very much as a Wittgensteinian family resemblance structure: no thread runs through the whole rope, but it is still the same rope all the way. (Author/PN)

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A b s t r a c t

An attempt is made to integrate categories of description aimed at characterising the experience of learning in terms of the logical relations that exist between them. The categories dealt with here depict characteristics of the outcome and style of learning, the approach to and the motivation for learning. It is concluded that a "horizontalised" outcome (in which a text's hierarchical structure is levelled out) implies operation learning in terms of Pask's dichotomy of styles, of which comprehension learning represents the other alternative. Comprehension learning implies a deep approach (as it is defined by Marton) while its opposite, the surface approach, implies extrinsic motivation. In such a way, categories of description can be linked to each other very much as a Wittgensteinian family resemblance structure: no thread runs through the whole rope, but it is still the same rope all the way.

## Foreword

The present paper is the first one of a series of three, all of which aim at integrating categories of description in terms of which learning has been characterised from an experiential perspective.

The description of the qualitatively different ways in which various aspects of reality are experienced and conceptualised and the search for logical relations between the categories of description arrived at have been called phenomenography (Marton, 1981), there of this term in the title. The endeavour to integrate categories of description corresponding to the different ways in which learning is experienced and conceptualised has by no means been completed during the two years in which this series of three reports has come about, there of the preposition "towards".

This first report is very much a working paper, which may be of some interest to those who consider the whole undertaking as such, as a relatively meaningful project.

This paper was presented in a slightly different form at the Sixth International Conference on Improving University Teaching, July 9-12 1980 in Lausanne, Switzerland. It was written while the author was a Visiting Senior Research Fellow at the Institute for Educational Technology, University of Surrey, England. The research reported was financially supported by the Swedish Council for Research in the Humanities and Social Sciences.

Mölndal, December 1982

Ference Marton

During recent years,an increasing number of studies has been published in which an experiential perspective on student learning has been adopted, learning has been studied from the learner's point of view, so to speak. Instead of asking questions such as "How do students learn in actual fact?" "How can the context of learning best be characterized?" or "To what extent do students master the content of their studies?" in these differently focussed investigations,questions of the following kind are asked: "How do students experience learning?", "How do they experience the academic setting in which the learning is taking place?" or "How do the students conceptualize the subject matter they are learning about?" This way of formulating problems represents what I have earlier called second-order perspective (Marton 1981). The question is not how things <u>are</u> but rather how people <u>think</u> things are and <u>experience</u> them.

As research is carried out,more and more categories are arrived at, categories aimed at characterizing the different ways in which various aspects of learning are experienced by the learner. Let us mention some examples. A well known distinction is made as to how "the why" of learning is answered in terms of extrinsic versus intrinsic motivation (see for instance Fransson 1977). The students' approach to the learning task has been said to vary between deep and surface approach (Marton, 1975) and in relation to the execution of the learning task two styles of learning (comprehension and operation) have been identified (Pask 1976). In the case of the outcome of learning, qualitative differences have repeatedly been pointed out. These differences are, as a rule, described in terms which are specific to the specific content, but differences of a more general kind have also been reported (e.g. Marton and Säljö 1979).

Now, it is perfectly obvious that further progress cannot be made simply by adding new results in the form of new categories of descriptions to the previous ones. And in actual fact my aim with this paper is exactly this- to discuss the question of integrating research findings in the field of student learning.

Noel Entwistle and his colleagues have presented one alternative as to how the problem of integration should be approached (Entwistle, Hanley and Hounsell, 1979). Their methodology can hardly be said to represent a fully fledged experiential perspective. In this case the students and their way of

functioning is described in terms of a number of variables corresponding to different categories such as "Extrinsic motivation", "Surface approach", "Operation learning" etc. The pattern of statistical relationships is accounted for by means of some multivariate method, such as factor analysis. The variation in the different variables is then expressed in terms of variation in underlying dimensions, the number of which is less than that of the variables. Though the statistical analysis is atemporal in character, the variables and the dimensions can be seen as temporally separate aspects of learning, e.g. intention, execution, outcome. It thus seems reasonable to interpret one factor which is statistically related to another factor as an antecedent or cause of the other factor. A model is then arrived at in which the various categories are considered to have cause-effect relations to each other. The previously mentioned aspects of learning motivation, approach, style and outcome can be found in the model presented by Entwistle's (1980) more complex and dynamic model.

Diana Laurillard has chosen a different alternative. She wants to integrate research findings regarding categories of description by means of case studies. She starts with the categories arrived at previously and she investigates whether or not their applicability can be verified anew. The next step is based on the assumption that the learning situation forms a coherent whole from the student's point of view. Laurillard thus tries to connect the various categories of description while adopting an experiential perspective. The outcome, is, however, likely to turn out to be a model not very different as to type to the one put forward by Entwistle. Behind the variation in the actual outcome we find variation in learning style, behind variation in learning style we find variation in approach to learning and behind the variation in approach to learning we find variation, for instance, in kind of motivation (see Laurillard 1978, 1979).

By means of a close analysis of the relationships
<u>within</u> cases she manages to establish links between
motivations and approach ("... intrinsically oriented students tend to take a deep level approach irrespective of the task requirements" 1978, p 186),
motivation, perceived task requirements and approach ("... if the task is seen to require reproductive thinking or memorizing, then the extrinsically oriented students tend to concentrate on this, taking a surface level approach to the task", ibid),

perceived task requirements, approach and learning style ("... if a student takes a surface level approach then his learning style will tend to reproduce that part of the teaching that is required by the learning task", ibid).

The point Laurillard is making is that though the values of the variables may change across learning tasks for the same student the relations between the variables remain stable, that is even if the student's aim, perception of requirements or experience of the learning task may vary from task to task, the relationship between aim, perception of requirements and experience of learning task is the same. This is quite a radical position according to which, by means of a shift to a fully fledged experiential perspective, we can reveal relations which concern not so much particular persons but rather particular persons' functioning in particular situations. In spite of the claim for more or less distinct one-to-one relations between the various factors, Laurillard's picture of learning has, in common with Entwistles probabilistic model, the empirical character and the causal pattern thought to underly data.

At this point I would like to introduce some ideas put forward by the Norwegian psychologist Jan Smedslund. He argues that in psychological research we should make an effort to distinguish between what is logically neccessarily true and what is more or less a question of arbitrary facts to be understood in their historical-cultural contexts. Failing to make this distinction results in us making tautological relationships to objects of empirical testing or overgeneralising arbitrary facts and erronously considering them as natural laws.

For the sake of example

> "Let us say P is a person, T is an act and S is a situation. Then the statement 'P does T in S only if P can do T in S and P tries to do T in S' is analytically true. It should not be made empirical testing in which we check whether or not there are any cases in which a person who either is not able to do T or does not try to do it still performs it" (Smedslund, 1978).

On the other hand - to use another of Smedslund's examples - it is an empirical fact that Norwegian citizens in the early 1980's almost always prefer a knife and fork to sticks for eating dinner. This fact is by no means logically (or otherwise) neccessary, it should instead be understood historically.

The relation of this argument to the theme of the present paper is that even if we can make empirical observations of the kind that, for instance, "a larger percentage of science students at British universities was found to be instrumentally oriented towards their studies than was the case with students in the humanities", some of the relations we can find between various categories of description linked with the experience of learning are of logical nature. This means that instead of one factor being an antecedent, or the cause of another factor it may turn out to represent two factors simultaneously present and aspects of the very same experience logically related to each other. My point here is that we should consider the question of what kind of logical relations exist between categories arrived at in order to characterize various aspects of the experience of learning. Unfortunately I have hardly any results to offer. Instead I would like to exemplify the kind of questions that may be asked in such an analysis.

Let us then take a somewhat closer look at the four aspects mentioned above: motivation, approach, style and outcome.

The well-known distinction between intrinsic and extrinsic motivation was summarized by Fransson (1977) in terms of the following definitions

> "Intrinsic motivation for learning is a state where the relevance for the learner of the content of the material is the main reason for learning.
>
> Extrinsic motivation for learning is a state where the reasons for the learning effort have nothing to do with the content of the learning material. A good learning performance serves only as a means for achieving some desired end result." (p 246)

We may add that in the case of intrinsic motivation we can possibly discern two different meanings of relevance. The content may be relevant

in the sense of being considered useful or functionally needed. On the other hand the content may be epistemologically relevant, i.e. it may satisfy the learner's curiosity. In both cases, however, it is the content which is relevant and which is focussed on as opposed to the case of extrinsic motivation or instrumental orientation where the very content is in actual fact arbitrary in relation to the extrinsic rewards one tries to achieve or the punishment one tries to avoid.

As to approach to learning the original distinction was made between the deep approach (focussing on what the text is about) and the surface approach (focussing on the text itself) (Marton 1975, Marton and Säljö 1976). A more detailed description however, has been given by Marton (1974, 1979) in terms of the different symptoms, which are seen as indicators of deep or surface approach. Also Entwistle et al (1979) who started with the notion of deep/surface approach arrived at a characteristic which goes beyond the simple dichotomy. They identified three different forms (or symptoms) of both kinds of approaches:

DEEP APPROACH

$D_1$ Personal experience (integrating the task with oneself)

$D_2$ Relationships (integrating the parts into a whole)

$D_3$ Meaning (integrating the whole with its purpose)

and

SURFACE APPROACH

$S_1$ Unrelatedness (defining the task as separate or its parts as discrete)

$S_2$ Memorization (defining the task as a memory task)

$S_3$ Unreflectiveness (defining the task in an external way)

While the two different approaches to learning are described in terms of the students' accounts of their experience of what it takes to learn, styles of learning were originally assessed by means of detecting the way the student proceeds through a well-defined task (such as the Spy-ring test for instance). Another - and in my opinion significantly different - way of discerning the two different styles is the teachback method. In this case our categorization is based on the student's description of the

content of the learning task. The important difference is that in this case we do not so much refer to the student's qualities as a learner but rather to how the particular content appears to him. This implies that an experiential perspective has been adopted. Anyway, originally, a distinction was made between holist strategy ("to learn, remember and recapitulate as a whole, formally in terms of high-order relations") and serialist strategy ("to learn, remember and recapitulate a body of information in terms of string-like cognitive structures where items are related by simple data-links") (Pask and Scott 1972). The generalized and less well defined forms of these strategies have been called styles of learning and we distinguish between comprehension learning (description building) and operation learning (procedure building). Starting with this Paskian dichotomy, Laurillard (1979) arrived at a more detailed description by discerning a number of sub-types of each styles:

"Operation Learning (Procedure Building)

$O_1$ Uses definitions

$O_2$ Uses procedural or relational rules

$O_3$ Uses logical derivations

Comprehension Learning (Description Building)

$C_1$ Compares or distinguishes theory and practice

$C_2$ Interprets theory in terms of practice

$C_3$ Introduces (strictly) redundant or irrelevant information

$C_4$ Compares two or more situations (e.g. finds an analogy) or considers a simplified situation." (p 404)

I would also like to briefly discuss the description of the outcome of learning. From an experiential perspective, we can describe differences in the outcome of learning in terms of qualitative differences regarding how the content of learning is understood. This implies description in terms of categories which vary as the content varies. How the concept of "force" is understood by physics students has to be described in terms of the different forms it appears to them, how the concept of "opportunity cost" is understood by students in Economics has to be described in terms of the different form this particular concept appears to them. However, we can also describe differences in the outcome of learning on a more general level.

Marton and Säljö (1979) have described how a text with an inherent hierarchical structure can be understood either in terms of different levels i.e. as having a dimension of depth, or in the terms of a number of parts appearing in a sequential order, without a dimension of depth. The text is seen as flat so to speak. This breaking down and flattening out of the hierarchical structure of the text is called horizontalisation:

> "... people sometimes fail to perceive the vertical aspect of the written material, thus treating the various levels without realizing the logic of the material itself. The text appears "flat" as it were. A principle and an example, for instance, are conceived on the same level. Instead of realizing the superordinate relationship of the principle to the example, the principle and the example are understood as two different topics with solely a serial relation between them, one follows the other." (p 23)

After having dealt with these different aspects of the experience of learning separately we, we must consider the question of whether or not we can find any logical relationships between the categories of description in terms of which they have been characterized.

If we consider the relationship between approach to learning and motivation, we may notice that at least one form of surface approach described by Entwistle et al (1979) and earlier by Marton (1974, 1979) logically implies extrinsic motivation. Intrinsic motivation was defined earlier as having its basis in an interest in content. Now, one can hardly aim at memorizing a certain learning material because of interest in content. Memorization means, in fact, <u>not</u> focussing on content (though it can of course be done in addition to it). Even if extrinsic motivation may occur jointly with either deep or surface approach, this particular form of surface approach logically implies instrumental orientation.

If we now look at the different forms of approaches and the different forms of styles we see that one of the forms of comprehension learning discerned by Laurillard ($C_4$ "Compares two or more situations") can be seen as an instance or a subtype of the deep approach formulated in a more generalized way ("try to see connections between previously studied materials and currently studied materials"). Again, the latter thus logically implies the former.

We can also consider the relationship between categories used to describe the execution of the task (i.e. learning style) and those used to describe the outcome of the execution.

Most obviously (again), it is a question of a so called internal relationship. (If there is an internal relationship between A and B then we cannot speak of the same A or B without that relationship, A is A and B is B because of the relationship). In order to arrive at a certain kind of outcome, the learner must have proceeded in a certain way. This is in fact the point of departure taken by Svensson (1977) who instead of describing outcome and process separately and looking for the relationship between them afterwards, started with the assumption that there is a relationship after which he chose to describe both outcome and process so as to maximally satisfy the assumed relationship. And, in actual fact, when using the teachback technique to assess learning style we are inferring from the outcome the process which must have taken place. If we now look at how Marton and Säljö described horizontalization (which concerns outcome) and the original meaning that was given to serialist strategy (the generalized form of which is called operation learning and which concerns execution) we can observe that the former appears to be an instance of the latter and thus to imply it logically.

The three logical (implicatory) relationships we have pointed out between four different aspects of the experience of learning are summarized in Figure 1. The intention has been to illuminate and exemplify some of the different meanings attached to some of the different aspects of that experience. Furthermore my aim was to show that some meaning of a certain aspect has a logical (tautological) relationship to some meaning of another aspect while another meaning of that certain aspect has a logical (tautological) relationship to some meaning of a third aspect. One aspect is thus linked in one way to another aspect and this second aspect is linked in another way to a third aspect and so on. This illustrates nicely, I believe, the Wittgensteinian idea of family resemblances: no thread runs through the whole rope, but it is still the same rope all the way.

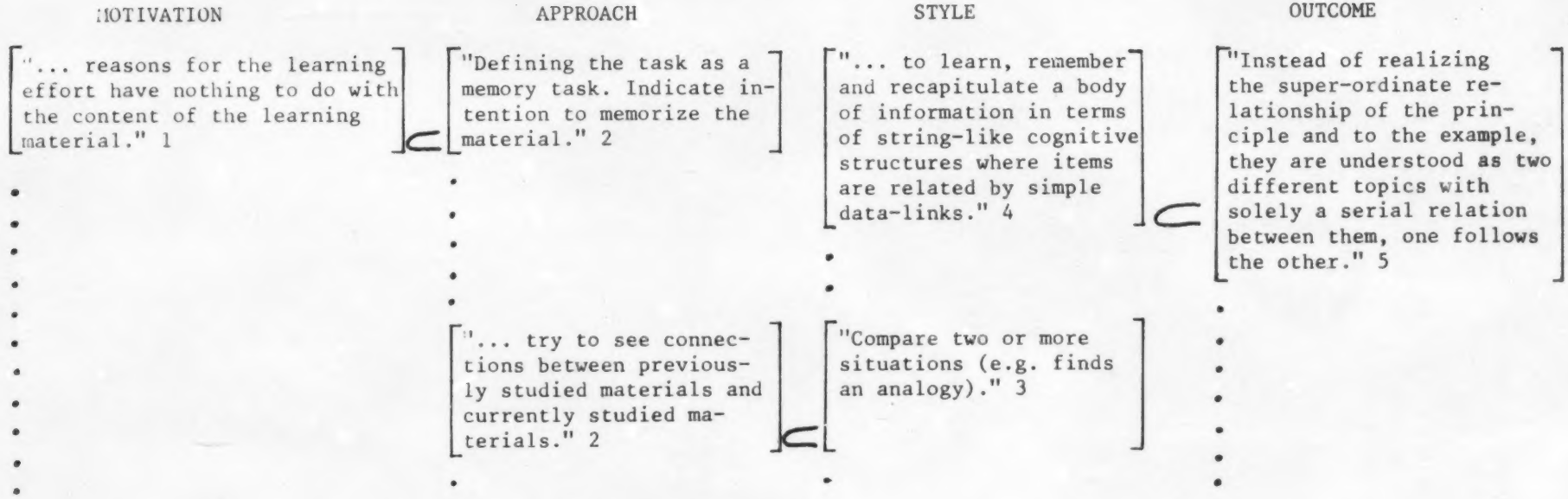
MOTIVATION
APPROACH
STYLE
OUTCOME
"... reasons for the learning effort have nothing to do with the content of the learning material." 1
"Defining the task as a memory task. Indicate intention to memorize the material." 2
"... to learn, remember and recapitulate a body of information in terms of string-like cognitive structures where items are related by simple data-links." 4
"Instead of realizing the super-ordinate relationship of the principle and to the example, they are understood as two different topics with solely a serial relation between them, one follows the other." 5
"... try to see connections between previously studied materials and currently studied materials." 2
"Compare two or more situations (e.g. finds an analogy)." 3

Figure 1

Relations between some experiential categories of learning

1. Fransson (1977)
2. Entwistle et al (1979)
3. Laurillard (1979)
4. Pask and Scott (1972)
5. Marton and Säljö (1979)

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